

**REMARKS**

Amendments to the specification have been made and are submitted herewith in the attached Substitute Specification. A clean copy of the specification and a marked-up version showing the changes made are attached herewith. The claims have been amended in the attached Preliminary Amendment. All amendments have been made to place the application in proper U.S. format and to conform with proper grammatical and idiomatic English. None of the amendments herein are made for reasons related to patentability. No new matter has been added.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **44912-2079800**. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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Description

**Arrangement for controlling and monitoring a switchgear  
assembly**

5

CLAIM FOR PRIORITY

This application is a national stage of PCT/DE2003/003104,  
published in the German language on April 8, 2004, which  
claims priority to German Application No. 102 44 845.0  
10 filed September 20, 2002.

TECHNICAL FIELD OF THE INVENTION

The invention relates to an arrangement for controlling and  
15 monitoring a switchgear assembly.

BACKGROUND OF THE INVENTION

Siemens document "SICAM HV - Digitale Leistungs-  
schaltersteuerung" (Digital Breaker Control DBC), Order  
20 No. E5001\_U113-A230/1 has disclosed an arrangement for  
controlling and monitoring a switchgear assembly, of which  
one of a plurality of switch panels is illustrated. On an  
uppermost hierarchical plane, the arrangement has a local  
control system which is formed by a station control  
25 computation device. Via a so-called field bus, there is a  
communications link between the station control computation  
device and a process control device and a protective  
device; the two latter devices form a central plane in the  
hierarchy. The two devices need to satisfy the  
30 environmental conditions in the switchgear assembly and  
also conditions for EMC (electromagnetic compatibility).  
The known arrangement also has a dedicated process bus for  
the switch panel shown, and, via this process bus, the

process control device is linked to apparatuses for  
digitally controlling switches, ~~said~~ the switches being  
isolating/grounding switches and a power breaker. In  
addition, the process control device is linked, via the  
5 process bus, to transformer electronics having digital  
outputs, which are usually arranged outside in the switch  
panel in the vicinity of the switches. The protective  
device in the known arrangement is connected on the input  
side directly to the transformer electronics and is linked  
10 on the output side to the apparatus for digitally  
controlling the power breaker.

#### SUMMARY OF THE INVENTION

The invention ~~is based on the object of proposing~~ discloses  
15 an arrangement for controlling and monitoring a switchgear  
assembly which can be produced with relatively little  
complexity.

~~This object is achieved according to the invention by~~ In one  
20 embodiment of the invention, there is an arrangement for  
controlling and monitoring a switchgear assembly having a  
station control computation device, in which the functions  
of at least one process control device and/or at least one  
protective device are integrated, and having apparatuses  
25 for digitally controlling switches of the switchgear  
assembly having digital inputs and outputs; in addition the  
arrangement has transformer electronics, arranged in the  
vicinity of the switches, having digital outputs, the  
digital inputs and outputs of the apparatuses for digital  
30 control and the digital outputs of the transformer  
electronics being logically linked to the station control  
computation device via arbitrary physical communications  
links.

One significant advantage of the arrangement according to the invention is the fact that it manages without a process control device and without a protective device, since the functions of these devices are transferred to the station control computation device~~+~~. ~~there is thus~~Hence, no special outlay on these devices which is essentially determined by the fulfillment of the requirements as regards the environmental and EMC conditions. A further, significant advantage consists in the fact that a hierarchical plane, namely that formed by the process control and protective device, is dispensed with, as a result of which a saving of one bus can be achieved. One additional advantage is provided by the fact that, for the station control computation device, a conventional computer may also be used for handling the functions of the process control device and the protective device, and thus specially protected computation modules, as had to be used in previous arrangements for the process control and protective devices, are no longer required.

~~With the arrangement~~In another embodiment according to the invention, the station control computation device can be formed in different ways. For example, the station control computation device for each switch panel of the switchgear assembly can in each case have one station control computer, in which the functions of the process control and protective devices, which are associated with the respective switch panel, are integrated. In this embodiment, computers may be used which have a relatively low performance.

If a conventional computer having a relatively high

computational power is available, it is advantageous if the station control computation device has, for at least two switch panels of the switchgear assembly, a common station control computation apparatus, in which the functions of the process control and protective devices, which are associated with the at least two switch panels, are integrated. This makes it possible to further reduce the overall complexity of the arrangement according to the invention.

~~The arrangement~~ In still another embodiment according to the invention may, in a simple and cost-optimum manner, be of redundant design by the apparatuses for digital control and the transformer electronics being logically linked to a further station control computation device via further arbitrary physical communications links.

#### BRIEF DESCRIPTION OF THE DRAWINGS

~~In order to explain the invention further, an exemplary embodiment of an arrangement according to the invention is shown in the~~ The invention is described below in more detail with reference to the drawings and exemplary embodiments, in which:

~~Figure which has~~ 1 shows a station control computation device, formed by a station control computer, for a switchgear assembly having a plurality of switch panels.

#### DETAILED DESCRIPTION OF THE INVENTION

The arrangement 1 shown in ~~the~~ Figure 1 for controlling and monitoring a switchgear assembly 2, of which only one switch panel 3 is shown in the figure, has, as the station control computation device, a station control computer 4,

which may be a conventional computer, for example a PC. The station control computer 4 is, on the one hand, linked in a conventional manner to a network control computer N, and, on the other hand, is connected to a bus 5 as the physical communications link. Apparatuses 6 and 7 for digital control having digital inputs and outputs 8 and 9 are linked to this bus 5; here, the apparatus 6 is an apparatus for digitally controlling an isolating switch 10 in the switch panel 3, and the apparatus 7 is an apparatus for digitally controlling a power breaker 11. In addition, transformer electronics 12 are connected with their digital output 13 to the bus 5. The transformer electronics 12 have a voltage transformer 14 and a current transformer 15 applied to them on the input side.

Further switch panels (not illustrated in the figure) of the switchgear assembly 2 are linked to the apparatuses 6 and 7, and transformer electronics, corresponding to the transformer electronics 12, are linked to the bus 5.

In order to increase the functional reliability of the arrangement shown in the figure, the bus 5 and also the station control computer 4 may be of redundant design by a second bus 5a being installed in parallel with the bus 5, and a second station control computer 4a, which is set up correspondingly, being installed in parallel with the station control computer 4.

- 6 -

~~Patent claims~~ What is claimed is: